endangered; and the authors write so clearly that we fear the pupils will actually know that a jet of geometry has pierced the algebra bulkhead.

But we must not let amusement at these foibles hide the real excellence of the book. As is to be expected from the ability of its authors, the book is one of the best of its kind. As signs of their good judgment we may mention that long multiplication and long division are marked for omission on a first reading, and that in graphs statistical curves come first.

We do not understand why the authors should say that 3·5 is nearer to 4 than to 3. If words have any meaning, either 3 or 4 may be given as the "nearest integer to 3·5."

(3) Barnard and Child's "Key" is clearly and concisely written, printed in very good type and nicely set out, and (so far as our sampling shows) correct. The good appearance is increased by appropriate use of the solidus, a symbol which is used by remarkably few writers in proportion to its real value.

(4) Prof. Adams's book contains in concise form and on the whole well-expressed all that the surveyor can possibly need for work in the town and in the country, for engineering or for railway work. We are sorry to see that the recurring decimal is still in use (p. 161). In the appendix, some questions (*e.g.*, 94, 166, 169) contain references to matter that is not supplied; it would be better to omit such questions altogether.

(5) The Practical Science consists of suitably chosen experiments, the printer's type is pleasing, and, except in the introductory chapter, the headings stand out effectively. The book covers heat, mechanics, electricity, and a number of miscellaneous things, and the student who carries out the experiments will have a good elementary equipment. The treatment of friction and the funicular polygon deserves special praise; the friction treated is kinetic, which for engineers is more important than static. The text is in general clear, but here and there it is condensed to the verge of unintelligibility. The references to the diagrams should be clearer, and the lettering of the diagrams be made to correspond to the text. Numerical results should be calculated to a suitable number of significant figures, and not left in a form involving the signs of multiplication, division, and square root.

With a little care in revision, the next edition should be really valuable.

(6) The idea of the Experimental Arithmetics is excellent. The pupil trained in this experimental way will obtain a grasp of arithmetical operations incomparably greater than was possible for the average pupil in the bookish days. And the idea is well carried out by experiments to be performed indoors and out of doors on the measurement of length, area, volume, weight, and angle.

Some secondary schools follow the rule "every lesson an English lesson," and we should like to see this rule adopted in elementary schools. When that day comes, the language of these books will need to be given greater precision; for the present time the language is sufficiently clear.

D. B. M.

BOTANICAL CATALOGUES AND MANUALS.

(1) *Catalogue of Hardy Trees and Shrubs Growing at Albury Park, Surrey.* Compiled by A. B. Jackson. Pp. viii + 66. (London: West, Newman and Co., 1913.)

(2) *Lowson's Text-book of Botany.* Indian edition. Adapted by M. Willis. With a preface by Dr. J. C. Willis. Pp. xii + 602. (London: W. B. Clive, 1913.) Price 6*s.* 6*d.* net.

(3) *Coconut Cultivation and Plantation Machinery.* By H. Lake Coghlan and J. W. Hinchley. Pp. xii + 128 + x plates. (London: Crosby Lockwood and Son, 1914.) Price 3*s.* 6*d.* net.

(4) *Genera of British Plants: with the Addition of the Characters of the Genera.* By H. G. Carter. Pp. xviii + 121. (Cambridge: University Press, 1913.) Price 4*s.* net.

(5) *The Story of Plant Life in the British Isles.* Introductory volume. By A. R. Horwood. Pp. xiv + 254 + plates. (London: J. and A. Churchill, 1914.) Price 6*s.* 6*d.* net.

(6) *Catalogue of the Plants Collected by Mr. and Mrs. P. A. Talbot in the Oban District, South Nigeria.* By Dr. A. B. Rendle, E. G. Baker, H. F. Wernham, S. Moore, and others. Pp. x + 157 + 17 plates. (London: British Museum (Natural History); Longmans and Co., 1913.) Price 9*s.*

(7) *Plant Physiology.* By Dr. Ludwig Jost. Authorised English translation by R. J. Harvey Gibson. Supplement. Pp. 168. (Oxford: Clarendon Press, 1913.) Price 2*s.* 6*d.* net.

(8) *Plant Life.* By T. H. Russell. Pp. 71. (Birmingham: Cornish Brothers, Ltd., n.d.) Price 2*s.* 6*d.* net.

(1) MR. JACKSON'S catalogue of the trees at Albury is an interesting document, especially when considered in comparison with the somewhat similar list compiled by him of the trees and shrubs at Syon. The value of the Albury list is enhanced by notes about particular trees and details as to the dates of introduction of the various species, characteristics of particular plants, uses, hardiness, etc. It is of interest to

notice that there are some remarkably fine trees at Albury, no doubt due to the soil and sheltered situation, a black Italian poplar, for instance, being about 150 ft. high, and therefore one of the tallest trees in England. The white lime and other limes, the London planes and cedars, and a special variety, var. *alburyensis* of the black walnut, a specimen of the chestnut oak of North America, *Quercus prinus,* in addition to other trees, are worthy of special mention.

(2) Of Mr. Lowson's text-book there is not much that need be said; it is one of the series published by the University Tutorial Press, and follows the usual lines of the compressed botanical text-book. This particular edition has been prepared more especially for Indian students, but this fact is not very prominent in the text, except where the more systematic side of the subject in relation to phanerogams is treated. Otherwise, both text and figures bear a very familiar, and not very inspiring, appearance.

(3) Messrs. Coghlan and Hinchley are to be congratulated on having produced a very useful and interesting work on the coconut, which should prove of considerable value at the present time when so much attention is being directed to the cultivation of the coconut palm and the utilisation of its products. The book is thoroughly practical, and also well illustrated with reproductions of photographs, which are explanatory to the text. Soil, preparation of the land, seed-nuts, pests, copra, and machinery are among the subjects of the chapters. Careful estimates are given of the profit and loss of coconut planting, from which it would seem clear that, provided a suitable site has been chosen for the plantation, its ultimate success as a paying investment is assured. In an interesting chapter on catch crops, the value of *Coffea robusta* is emphasised. Errors appear to be few, but one misprint of *s. d.* for *l. s.* in the last column of the exchange tables at the beginning of the book should be noted.

(4) Mr. Carter's book is written with the intention of familiarising students of British flowering plants and ferns with the genera arranged according to Engler's system. In dealing with the genera of ferns, the arrangement enunciated by Bower is followed.

The characteristics of the natural families are set out clearly in detail, and the genera are arranged under their tribes in key form. The book aims at directing the attention of students to a closer study of the genera of plants, a purpose which it appears admirably calculated to fulfil.

(5) Seventy-three photographs, several of which are quite pretty, appear to be the *raison d'être* of "The Story of Plant Life in the British Isles"; we cannot see otherwise why this discursive volume was published. The author in his introduction is careful to point out the faults which underlie the systems of the great botanists of history, and seems to suggest that a study of his own work will show the way of salvation. Whether the student will really become acquainted with the distinctive characters of the different families of plants by using this work would seem a matter of doubt, but he will find in these pages a considerable amount of miscellaneous information, such as the fact that daisies grow in churchyards, that there is no need to point out the characteristic features of the ivy as "any boy or girl can name it," and so on. A large number of common and local plant names are given, which is a feature of some interest, and there is a glossary of terms at the end of the volume.

(6) The Oban district of Calabar, Southern Nigeria, has yielded a rich harvest of new species and genera of plants to the indefatigable collectors, Mr. and Mrs. P. Amaury Talbot. The district, botanically, belongs to the Cameroon region, and the flora is continuous with that of the similar geological country included within German territory. In the British area, however, there is a certain admixture of plants from the Gulf of Guinea region. The Oban district is densely covered with forest, and is the home of a great diversity of species of plants; Mr. Talbot considers there are some four hundred to five hundred per square mile. With a rainfall of about 175 in., and a soil of decomposed granite and gneiss, it is scarcely remarkable that the flora should be a rich one. A striking feature of these forests is the number of cauliflorous trees, many of which were previously undescribed, six being new species of the remarkable myrtaceous genus Napoleona, the flowers of which resemble somewhat those of the parasitic Rafflesia of the east. The collection consists of 1016 species and varieties, of which 195 are new, and there are nine new genera. The plants have been determined with but few exceptions by the staff of the British Museum, and the results with various notes by Mr. and Mrs. Talbot are presented in the volume under review, which form a fitting tribute to the industry of the collectors. It should be remembered that Mrs. Talbot while in the country made a remarkable series of water-colour drawings of a great number of the plants, and in particular of the flowers of the cauliflorous tree, which it is to be hoped will soon be published in colour. The present volume is illustrated with seventeen plates of figures, in which the more striking of the new plants are figured.

The descriptions of new species occupy 119 pages, and are followed by a systematic list of the plants collected; among these may be noted *Poga oleosa* (Rhizophoraceæ), hitherto only known from the Gaboon, which is an interesting discovery, as its seeds are rich in oil. Lists of the ferns, mosses, fungi, and lichens which were collected by Mr. and Mrs. Talbot complete the enumeration.

(7) The supplement to Jost's "Plant Physiology" consists of a translation of the alterations of the second edition of the German original, and to be appreciated must be studied hand in hand with the translation of the book. Without the original translation the supplement is, of course, valueless, and even with the book it is a singularly tiresome way of presenting new information or of correcting errors. It would, we should have thought, been of more value to produce in course of time a complete new edition of Jost's lectures, since it will be impossible to continue to bring out further supplements embodying the changes in the newer German editions as they are published.

(8) The publication of the little book entitled "Plant Life" is the outcome of a desire of those who heard these lectures at an adult school to have them in permanent form. They have been published, therefore, with many of the original illustrations, and form a clear, simple, and useful account of plant life for an audience such as that to whom they were given. No doubt much of their value and charm lay in their delivery, and we cannot think that any very useful purpose has been served by the publication of these lectures beyond that of honouring the memory of one who was, no doubt, as good a teacher as he must have been an ardent friend.

OUR BOOKSHELF.

The Physician in English History. By Dr. Norman Moore. (Linacre Lecture, 1913, St. John's College, Cambridge.) Pp. 57. (Cambridge: University Press, 1913.) Price 2*s*. 6*d*. net.

THE charm of Dr. Norman Moore's historical writing rests, as such virtue must rest, on many qualities; on his wide and curious learning sitting lightly upon his pen, his humanity living in his biographical gift, and enriched by his retentive memory, and his appreciation of the past, always informed by his mastery of modern clinical medicine. As his subject for the last Linacre Lecture Dr. Moore chose "The Physician in English History"; that is to say, not a string of all the physicians of English history, but, like the sheep in the painting of the Primrose family, so many as the confines of his hour would admit. The chosen physicians were either distinguished in themselves or came into note at momentous or picturesque occasions. Thus the lecturer gave to his audience not a procession of English physicians, a great story which would indeed be welcome at his hands, but a small gallery of medical pictures set in a historical background. With the propriety of a lecturer in his university of Cambridge, he opened his discourse with Bede's unusually interpretable narrative of the disease and death of Ethelreda of Ely. The skill of Cynifrid, who, apart from the arid cram of Isidore, was probably a fairly competent "Wundaerzt," failed to save her life. Probably Cynifrid was called in too late, after long courses of monastic quackery.

Next we are taken to the death-bed of William the Conqueror, whose mortal malady is illumined by the lecturer's parallel instances from twentieth-century St. Bartholomew's.

The pages given to Linacre himself are by no means a perfunctory tribute to the founder, but a happy blend of the physician as a man of letters moving in pleasant groups amid his brilliant contemporaries of the Renaissance, Erasmus, for example, Tonstall, and More. By a deft selection of materials from a well-stored memory, Dr. Moore thus carries us century by century to the middle of the eighteenth, giving us by the way bright glimpses of Wadham in the mid-seventeenth; then to the horizon of Swift and Pope with the flash of that tantalising meteor Arbuthnot, and bringing us at length to the great lexicographer and Dr. Brocklesby. A dainty entertainment. May the author in his spare hours give us many more of such.

Text-book on Railroad Surveying. By G. W. Pickels and C. C. Wiley. Pp. ix+263. (New York: John Wiley and Sons, Inc.; London: Chapman and Hall, Ltd., 1914.) Price 10*s*. 6*d*. net.

THIS book gives a fair representation of American practice in railroad surveying. The subject-matter includes brief directions for carrying out the preliminary reconnaissance in various types of country, and the location of the best route. Fuller explanations follow of the setting out of circular and spiral transition curves; this section includes turn-outs, connections, and crossings. Earthwork problems are also treated. Methods are explained of shifting the location of curves in the field from that shown on the plan in order to secure better conditions of cutting or filling. The text occupies 125 pages, and the remaining 138 pages are taken up with tables giving curve functions, logarithms of numbers, trigonometrical functions of angles and earthwork. Detailed mathematical solutions are omitted, and an elementary knowledge of surveying is assumed. Judging from the terse nature of the contents, the title "Pocket-book of Railroad Surveying" would probably be more appropriate, and would convey to engineers the fact that the book will be found to be a useful companion in his field operations.